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United States Fidelity, et al. vs SOCO West, Inc., et al. 12/13/05

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BILLINGS DIVISION

UNITED STATES FIDELITY &
GUARANTY COMPANY,

Plaintiff,

and Cause No. CV-04-29-BLG-RFC

CONTINENTAL INSURANCE COMPANY,

Plaintiff Intervenor,

vs.

SOCO WEST, INC., BRILLIANT

NATIONAL SERVICES, INC.,

STINNES CORPORATION, and

BRENNNTAG (HOLDING) N.V.,

Defendants.

COPY

The Deposition of BRUCE E. DALE, Ph.D.,
Taken at 120 North Washington Square,
Lansing, Michigan,
Commencing at 9:05 a.m.,
Tuesday, December 13, 2005,
Before Kelli L. Werner, CSR-6610, RPR.

Pat Carl & Associates (763) 591-0535 or (800) 591-9PCA (722)

DEFENDANTS' 3/23/06 MOTION IN LIMINE #3

ATTACHMENT I

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<p>1 If you need a break at any time, just ask 2 and I will accommodate you. Before we take a break I 3 will ask that you just answer the question if there is 4 one pending before we break.</p> <p>5 A. Fine.</p> <p>6 MR. LYNCH: And, for the record, there is 7 an agreement among counsel in this case that we will 8 not be asking questions about drafts of opinions or 9 communications with counsel. Is that --</p> <p>10 MR. DAVIS: Right.</p> <p>11 MR. GROSSBART: Right. I would like to 12 reflect the stipulation we discussed before the start 13 of the deposition that an objection by any lawyer on 14 this side of the table will count as the objection of 15 the other. So the objections, I should say, on behalf 16 of any plaintiff or intervening plaintiff is the 17 objection of the other.</p> <p>18 MR. LYNCH: Yes. We have agreed to that.</p> <p>19 MARKED BY THE REPORTER:</p> <p>20 DEPOSITION EXHIBIT NUMBER 2000 21 9:08 a.m.</p> <p>22 BY MR. LYNCH:</p> <p>23 Q. Mr. Dale, I have just handed you a document that's 24 been marked as Deposition Exhibit 2000 in this matter. 25 Is that a copy of the expert report you filed on</p>	<p>1 preparing -- submitting this report?</p> <p>2 A. Yes.</p> <p>3 Q. Why hadn't you done this work prior to submitting the 4 report?</p> <p>5 A. Just didn't have the time. I thought about it later.</p> <p>6 Q. Other than the calculations involving the evaporation 7 of perchloroethylene, have you formed any opinions 8 that you expect to testify about at trial or in any 9 affidavits that are not contained in this report?</p> <p>10 A. No.</p> <p>11 Q. If you look at the report, I notice that there are 12 numerous documents cited in the footnotes of the 13 report. In connection with forming the opinions that 14 are set forth in this report did you consider or 15 review any documents that are not identified in the 16 report?</p> <p>17 A. Yes.</p> <p>18 Q. You did?</p> <p>19 A. Yes.</p> <p>20 Q. So it's accurate to say that this report does not 21 identify all the materials you considered in 22 connection with forming your opinions?</p> <p>23 A. That's correct.</p> <p>24 Q. Why didn't you list out the materials you considered 25 in connection with forming your opinions in the</p>
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<p>1 behalf of the plaintiffs?</p> <p>2 MR. DAVIS: I will object to the term 3 filed.</p> <p>4 BY MR. LYNCH:</p> <p>5 Q. You prepared on behalf of the plaintiffs.</p> <p>6 A. Yes.</p> <p>7 Q. Am I correct that this is a report that you offered to 8 rebut the expert report that was prepared by one of 9 the experts that the defendants retained -- Dr. Robert 10 Harris?</p> <p>11 A. Yes.</p> <p>12 Q. Does this report contain a complete statement of all 13 the opinions that you expect to testify at the trial 14 of this case and the basis for those opinions?</p> <p>15 A. Yes.</p> <p>16 MR. DAVIS: Let me interject. Without 17 going into our discussions yesterday, Dr. Dale 18 subsequent to issuing his report did do about two 19 sheets of calculations to supplement -- I guess would 20 be the correct term --</p> <p>21 THE WITNESS: It reflects the evaporation 22 rate which I testified in my report that perc 23 evaporates very rapidly.</p> <p>24 BY MR. LYNCH:</p> <p>25 Q. That's work you prepared after filing or after</p>	<p>1 report?</p> <p>2 A. They weren't relevant, didn't impact my opinions.</p> <p>3 Q. What additional documents other than those that are 4 identified in this report did you consider?</p> <p>5 A. We sent approximately two boxes of documents that 6 contained site investigation reports, hydrogeology 7 types of things. I can't tell you in detail what they 8 are. There are several boxes.</p> <p>9 Q. Anything else other than site investigation reports?</p> <p>10 A. I believe there were a couple of depositions that I 11 didn't find anything relevant in.</p> <p>12 Q. Do you recall whose depositions those were?</p> <p>13 A. No, I can't.</p> <p>14 Q. Other than site investigation reports and a couple of 15 deposition transcripts do you recall any documents 16 that you considered in connection with forming your 17 report that are not identified in the report?</p> <p>18 A. Not that I recall.</p> <p>19 MR. LYNCH: At this point I just want to go 20 on the record that pursuant to Rule 26 the expert is 21 required to identify all documents they consider in 22 connection with providing their expert report. We're 23 going to object to that not having been done in this 24 report and hold the deposition open pending our 25 receipt of a complete list of those documents.</p>

3 (Pages 6 to 9)

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<p>1 MR. DAVIS: Well, put it on the record. 2 Your objection is noted. 3 MR. GROSSBART: I'm not sure that's an 4 exact correct statement of what an expert is supposed 5 to do in light of the foundation testimony you 6 elicited. 7 MR. DAVIS: On that note I think -- I'm not 8 sure what you are referencing in terms of what's 9 listed in this report. He obviously footnoted many 10 documents that are part of the file which he did rely 11 on and formed the basis of his opinion. 12 MR. LYNCH: I understand that. He just 13 testified he did consider additional documents in 14 forming his opinion. I don't have it in front of me, 15 but I think the rule says considered. 16 MR. GROSSBART: I think he says he looked 17 at other documents and decided they were not relevant 18 to his opinion and, therefore, that is why they are 19 not listed. He could have listed the Detroit Free 20 Press, too. That probably wouldn't have been relevant 21 to his opinion. 22 BY MR. LYNCH: 23 Q. Did you consider additional documents in connection 24 with forming your opinion that are not listed in your 25 report?</p>	<p>1 (Off the record at 9:17 a.m.) 2 (Back on the record at 9:26 a.m.) 3 MARKED BY THE REPORTER: 4 DEPOSITION EXHIBIT NUMBERS 2001-2004 5 9:26 a.m. 6 BY MR. LYNCH: 7 Q. Mr. Dale, you have in front of you the additional 8 documents that have been marked as exhibits in this 9 matter -- Exhibits 2001, 2002, 2003, 2004. 10 Am I correct that these are the documents 11 you relied on subsequent to submitting your expert 12 report in this matter to reach a conclusion as to the 13 evaporation rates of perchloroethylene? 14 A. Yes. 15 Q. If we look at Exhibit 2004, could you identify that 16 document for me? 17 A. These are calculations I did regarding the rate of 18 evaporation of perchloroethylene. 19 Q. What are the assumptions that you have made in 20 connection with these calculations? 21 A. The assumption is a spill -- instantaneous spill on 22 level concrete of 250 gallons of perc. The ground 23 temperature is assumed to be 77 degrees Fahrenheit 24 which is the air temperature. 25 Q. I'm sorry. What was the temperature?</p>
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<p>1 A. I read or scanned additional documents that are not 2 referenced here. None of them impacted my opinion. 3 Q. I see that you have brought several file folders' worth of documents with you today. Could you tell me what those documents are? 4 A. They are depositions, record of decision, correspondence. They are essentially everything that's footnoted here -- referred to in the footnotes. 5 Q. Any of these documents not identified in the footnotes of your report? 6 A. I don't believe so. 7 Q. And maybe at a break we can just confirm that or not. That's what we can do. 8 Since filing your expert report have you reviewed or considered any additional documents relating to your opinion? 9 A. Yes. 10 Q. What documents are those? 11 A. It's the document that underlies the calculation that I did. It's this document. 12 MR. LYNCH: Can we mark this? Do we need to make a copy first? 13 MR. DAVIS: Probably need to make a copy. 14 MR. LYNCH: Let's take a quick break and we'll make a copy.</p>	<p>1 A. 77 degrees Fahrenheit. And a wind speed of approximately -- I think it was 9.1 miles per hour. 2 Q. If you look at your report, can you identify the portion of the report that these calculations pertain to, if any? 3 A. Yes. It's opinion B(a). Also I would say B(c). 4 Q. And opinion B(a) says, perc evaporates much more rapidly than it permeates intact concrete. Under conditions favoring maximum permeation of perc it will still evaporate about 1000 times more rapidly than it will permeate concrete. 5 Did I read that correctly? 6 A. Yes. 7 Q. Can you explain how these calculations relate to that opinion? 8 A. Well, it's a calculation of the evaporation rate of perc. This perc will evaporate -- a 250-gallon spill of perc under these conditions will evaporate in less than 20 minutes. See page 3-3. 9 Q. So under these conditions it's your conclusion that a 250-gallon spill of perc would completely evaporate in 20 minutes? 10 A. Yes. 11 Q. Would there be any residue left on the concrete? 12 A. No.</p>

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<p>1 opinion?</p> <p>2 A. Yes.</p> <p>3 Q. Am I correct that you identify in that paragraph two bases for that opinion? First, such a large spill of perc would have damaged or discolored a large area of asphalt; second, such a large spill of perc would have produced a strong odor over a large area and would almost certainly have been noted by Dyce employees or Dyce neighbors.</p> <p>10 A. That's correct.</p> <p>11 Q. Anywhere in that paragraph do you discuss the distance that the perc would have to travel being a relevant factor as to why it is highly unlikely that such a perc spill actually occurred?</p> <p>15 A. No.</p> <p>16 Q. So that's a new opinion you formed?</p> <p>17 A. No, it's not.</p> <p>18 Q. Where is that opinion expressed in your expert report?</p> <p>19 A. It's the evaporation rate of perc in B(a).</p> <p>20 Q. B(a) states, perc evaporates much more rapidly than it permeates intact concrete. Under conditions favoring maximum permeation of perc, it will still evaporate about 1000 times more rapidly than it will permeate concrete.</p> <p>25 A. And B(b).</p>	<p>1 A. It does not.</p> <p>2 Q. Do you intend to testify as to that fact at trial or that opinion at trial?</p> <p>4 A. If I'm asked.</p> <p>5 Q. But you would agree that your report does not contain a statement as to that opinion?</p> <p>7 MR. GROSSBART: Objection to the form of the question.</p> <p>9 MR. DAVIS: That mischaracterizes his testimony and it's argumentative at this point.</p> <p>11 A. It certainly mischaracterizes my testimony.</p> <p>12 BY MR. LYNCH:</p> <p>13 Q. This photograph, in your opinion, supports that testimony?</p> <p>15 A. Supports what testimony?</p> <p>16 Q. Supports your -</p> <p>17 MR. DAVIS: Supports his -</p> <p>18 BY MR. LYNCH:</p> <p>19 Q. Supports your opinion as to the likelihood of a perc spill in the loading/unloading area resulting in contamination in the northwest corner.</p> <p>22 A. That's correct.</p> <p>23 Q. Showing you a compilation of additional documents that you brought with you here today. Can you identify those documents?</p>
<p>1 Q. And that discusses -- perc is a good solvent for hydrocarbon compounds such as asphalt and will dissolve the hydrocarbon portion of asphalt. If spilled on asphalt, perc would dissolve some of the asphalt and then would slowly evaporate from the resulting asphalt/perc mixture.</p> <p>7 Where in either of those paragraphs do you mention the distance that the perc would have to travel?</p> <p>10 A. I do not.</p> <p>11 Q. If it's your opinion that that is a basis for rebutting Dr. Harris's opinion as to how the contamination got to the northwest corner why isn't that in your report?</p> <p>15 A. I disagree with your characterization of my testimony.</p> <p>16 Q. How so?</p> <p>17 A. I testified now a number of times that perc evaporates very, very rapidly.</p> <p>19 Q. Mm-hmm.</p> <p>20 A. A perc spill does not magically travel 350 feet without evaporating at the same time. It just does not happen. It's physically impossible.</p> <p>23 Q. Where is that statement contained in your expert report that a perc spill cannot travel 350 feet without evaporating?</p>	<p>1 A. These are summaries of contamination of soil and groundwater at different places or points on the Dyce property.</p> <p>4 Q. Okay. Did you consider those documents in connection with forming the expert report set forth in your report?</p> <p>7 A. I considered them. They did not impact my opinions.</p> <p>8 Q. Those documents that you're looking at, is it true that they contain information showing where the various sampling locations were taken from at the Dyce site and also contained information showing what the amounts of contamination, if any, were at each of the samples?</p> <p>14 A. That's correct.</p> <p>15 Q. Is that information that you considered in connection with forming the opinions expressed in your report?</p> <p>17 A. I just answered yes, that I considered it.</p> <p>18 Q. But the -- are you saying -- is it your testimony that the location of the samples on the Dyce site and the amount of contamination found in the samples, that information had no impact on the opinions expressed in your expert report?</p> <p>23 A. I don't understand your question.</p> <p>24 Q. In your report you discuss potential sources for contamination found at the Dyce facility near</p>
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1 Billings, Montana. Is that correct?	1 Q. What documents did you rely on to ascertain that
2 A. I think that mischaracterizes my testimony. I distance?	2
3 identify ways – a number of ways in which perc was 3 A. There are photographs of the site with a scale that I	4 used someplace.
4 routinely released, spilled, cleaned from equipment at 5	5 Q. Are those documents identified in your expert report?
5 the facility. 6 A. I believe so.	6
6 Q. In part C of your report – part C(c) it states, perc 7 Q. Can you tell me where in your expert report those	7
7 that's protected from evaporation could remain for 8 photographs – you have your expert report in front of	8
8 years at the bottom of ponds and could eventually 9 you. Can you tell me where in your expert report you	9
9 permeate through concrete over long periods of time. 10 identify those photographs?	10
10 Perc would attack and eventually dissolve most plastic 11 A. I don't recall.	11
11 liners thereby escaping to the underlying soil. 12 Q. Well, look through your report.	12
12 A. That's correct.	13 A. Well, I didn't identify any photographs in my expert
13 Q. Is it your opinion that that is the cause of the perc 14 report.	14
14 contamination at the Dyce site?	15 Q. Well, there are documents you relied on that are not
15 A. That's beyond my – I don't know.	16 identified in your expert report.
16 Q. You have no opinion as to the cause of the 17 A. You mischaracterized my testimony.	17
17 contamination at the Dyce facility?	18 Q. How so?
18 A. That's beyond the scope of my assignment here.	19 A. Suzanne Miller's response to second EPA request for
19 Q. Is that correct? You do not have an opinion as to –	20 information under CERCLA I believe has that – that
20 A. That's beyond the scope of my opinion here – beyond	21 kind of information. I suspect that some of the other
21 the scope of my assignment.	22 depositions do also.
22 Q. Do you have an opinion as to the source of any of the	23 The site investigation report, footnote
23 contamination at the Dyce facility in Billings,	24 number 23, I believe has scale information. Suzanne
24 Montana?	25 Miller's notarized response to the first EPA request
25 A. That's not my expertise. I have no opinion.	
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1 Q. You have no opinion on that. You won't be offering	1 under CERCLA I believe has that type of scale
2 opinion on that at trial? You don't intend to offer	2 information.
3 an opinion on that at trial?	3 Q. Do any of those documents contain information showing
4 A. No.	4 where the samples were taken from or the amount of
5 Q. I'm sorry. To clarify for the record, no, you will	5 contamination that was found in those samples?
6 not be testifying to that at trial?	6 A. I believe so.
7 A. No. That's not my expertise. That's not what I do.	7 Q. Which ones?
8 Q. Okay. How did – if they did – the information	8 A. I don't recall.
9 relating to the locations of the samples and the	9 Q. I'm showing you another document. Is that a document
10 amount of contamination found in those locations –	10 – can you identify that document?
11 how did that information affect any of the opinions	11 A. No, I can't. There are no Bates numbers. I'm not
12 expressed in your expert report?	12 sure where it came from.
13 A. Well, apparently the largest source of contamination	13 Q. Is that a document you considered in connection with
14 is that spot in the northwest corner that, again, is	14 forming the opinions expressed in your expert report?
15 about 350 feet from where perc was handled on the site	15 A. I considered it.
16 and where any spill of perc would probably have	16 Q. Is any of the information in that document – did you
17 occurred. That's a very long distance for a spill to	17 find it to be relevant to the opinions you expressed
18 travel.	18 in your expert report?
19 Q. So am I correct that information relating to the	19 A. No.
20 location of the samples taken at the Dyce facility and	20 Q. Completely irrelevant?
21 the amount of contamination found in those locations	21 MR. GROSSBART: Objection to the form of
22 is information that you considered and relied on in	22 the question. You have now gone from considered to
23 forming the opinions formed in your expert report?	23 relied to relevant. And in context I think the
24 A. Well, particularly the distance from the spill	24 question is vague as to what you mean by relevant.
25 location to the contamination.	25 Under Rule 26 under the federal rules of

11 (Pages 38 to 41)

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1 on?	1 of the asphalt and that it could be weeks or months,
2 A. Yes.	2 could be quicker, could be longer? Would you agree
3 Q. Was Mr. Adams an expert witness?	3 with that statement?
4 A. Yes.	4 A. I think it could be any time from essentially
5 Q. Was he retained by the same counsel as you?	5 instantaneous to fairly long depending on how much
6 A. I don't recall if he was or not. I don't know if he	6 perc and what the temperature was, the things he cites
7 was on the opposite side or not.	7 here.
8 Q. And what testimony does Mr. Adams give that you feel	8 Q. What other variables would come into play that would
9 supports the opinions expressed in your expert report?	9 affect how soon perc might noticeably begin to
10 MR. GROSSBART: Object to the form of the	10 dissolve asphalt?
11 question in light of his prior testimony about what he	11 A. Temperature, wind speed, how much perc -- how thick
12 said supports his opinion or not.	12 the puddle of perc was, attempts to clean it up.
13 BY MR. LYNCH:	13 Those are probably the major variables.
14 Q. Do any statements -- let me back up.	14 Q. Would the composition of the asphalt have any effect
15 In your report you cite the deposition	15 on it?
16 testimony of Franklin Agardy, correct?	16 A. Very little, I would think.
17 A. Correct.	17 Q. Why do you say that?
18 Q. Is it your belief that the deposition testimony of	18 A. Asphalt composition does not vary that much.
19 Mr. Adams is essentially substantively the same with	19 Q. Would it make a difference if the asphalt was wet or
20 respect to the information that was provided by Mr.	20 dry at the time of the spill?
21 Agardy in his deposition?	21 MR. DAVIS: Object as to the form of the
22 A. For that particular point, yes.	22 question. Wet or dry with what? Do you mean water?
23 Q. What point is that?	23 MR. LYNCH: Rainwater. I'm sorry. With
24 A. The point is the reaction of perc -- that perc will	24 water.
25 dissolve asphalt.	25 A. Unless it was a standing puddle of water, probably
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1 Q. And what does Mr. Adams say about that?	1 not.
2 A. Page 52, he says the perc will dissolve asphalt.	2 BY MR. LYNCH:
3 Q. Under what conditions is he referring to?	3 Q. What if the asphalt was covered in dirt or snow or
4 A. He doesn't give specific conditions.	4 ice?
5 Q. I'm sorry. What page is that?	5 MR. DAVIS: Object as to compound. I think
6 A. Actually pages 51 through 53.	6 you are asking two different or maybe a combination --
7 Q. I'm going to ask you on page 51 starting at line	7 I'm not sure, Chris, what you are asking. Dirt, snow
8 seven. Question: Okay. Other than that do you have	8 and ice or dirt, snow --
9 any basis for your answer that it would be weeks or	9 BY MR. LYNCH:
10 months before perc would actually noticeably begin to	10 Q. What if the asphalt was covered in dirt?
11 dissolve asphalt.	11 MR. GROSSBART: Do you mean buried?
12 Well, I think the answer is no. Let me --	12 BY MR. LYNCH:
13 let me just add that I think the weeks or months --	13 Q. A layer of dirt that -- just compacted dirt that had
14 that it could be quicker, could be longer. It depends	14 been -- you know, from semis driving over it.
15 on again the rate of application, the consistency of	15 A. How thick a layer of dirt?
16 contact, the thickness of the asphalt, you know,	16 Q. Does that make a difference?
17 various things.	17 A. Sure.
18 I will ask you to read that.	18 Q. What if it's a dusting of dirt that has been compacted
19 A. I think you read it fine.	19 into the pores of the asphalt from semi traffic?
20 Q. Okay. Would you agree with Mr. Adams that the rate --	20 A. Dirt that got into the pores of the asphalt I don't
21 actually, let me --	21 think would have any effect. A layer -- a thick layer
22 Would you agree with Mr. Adams that the	22 of dirt would probably dilute the perc a bit, maybe
23 time it would take for perc to noticeably begin to	23 reduce its effect. But your question has way too many
24 dissolve asphalt depends on several factors -- the	24 variables for me to answer.
25 rate of application, consistency of contact, thickness	25 Q. I will show you what's Deposition Exhibit Number 2009.

15 (Pages 54 to 57)

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<p>1 Q. So someone trained as an environmental engineer would 2 likely have significant knowledge of chemistry? 3 MR. DAVIS: Objection. Calls for 4 speculation. 5 A. Depends on the program. They may or may not, but they 6 should. 7 BY MR. LYNCH: 8 Q. What did you write your master's thesis on? 9 A. Kinetic and mass transfer characteristics of 10 immobilized pancreatic ribonuclease. 11 Q. For those of us who don't have a master's in chemical 12 engineering could you describe what that is in 13 laymen's terms? 14 A. The intention was to study how fast a reaction between 15 a particular enzyme and a compound called ribonucleic 16 acid would occur when the enzyme which is called 17 ribonuclease was physically attached to a porous solid 18 material. 19 Q. Does that topic have anything to do with chlorinated 20 solvents? 21 A. Anything to do? It deals with chemical reactions. It 22 deals with mass transfer. So, yes, it does. 23 Q. Specifically of chlorinated solvents? 24 A. Yes. Specifically applied to chlorinated solvents, 25 sure.</p>	<p>1 cellulose in inorganic solvents. 2 Q. Since earning your Ph.D. at Purdue have you received 3 any other degrees from any other post-secondary 4 educational institution? 5 A. Ph.D. is the terminal degree in my field. There is 6 nothing higher. 7 (Discussion off the record at 11:31 a.m.) 8 (Back on the record at 11:32 a.m.) 9 BY MR. LYNCH: 10 Q. I would like you to focus on the years from 1974 to 11 '79 -- or '68 to '79 -- the years in college. 12 A. Sure. 13 Q. Can you describe for me any coursework you had or 14 research you conducted at that time that concerned 15 chemical contamination in soils or groundwater? 16 A. Sure. Starting with my first class -- well, starting 17 with my basic chemistry and physics courses I was a 18 freshman student. I started with my calculus course 19 to understand, mathematically, contamination. 20 Going on to my sophomore year, in chemical 21 engineering we started studying mass balances and 22 energy balances. Allows you to keep track of 23 chemicals -- where they exist in processes. 24 Thermodynamics course deals with things like vapor 25 pressure and evaporation rates.</p>
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<p>1 MR. DAVIS: Don't ask him how. 2 THE WITNESS: It's his deposition. If he 3 wants to -- 4 MR. DAVIS: I understand. 5 BY MR. LYNCH: 6 Q. After receiving your master's from University of 7 Arizona did you then go on to receive a doctorate? 8 A. Yes. 9 Q. Where was that from? 10 A. At Purdue in 1979. 11 Q. And 1979 is when you received -- 12 A. My doctorate. 13 Q. You went directly from getting your master's to the 14 doctorate after that? 15 A. Yes. 16 Q. Was this also in chemical engineering -- your 17 doctorate? 18 A. Yes. 19 Q. Any particular emphasis or focus of your study or 20 research at that point? 21 A. That's the point at which I started calling myself a 22 biochemical engineer. I started dealing with 23 biochemistry and microbiology. 24 Q. What was the topic of your Ph.D. dissertation? 25 A. It was the thermodynamic characteristics of dissolving</p>	<p>1 Junior level courses, I would have to say 2 that, you know, two-thirds to three-quarters of my 3 courses deal -- are directly applicable to these 4 issues here. 5 Q. Regardless of whether they are directly applicable -- 6 the principles of the classes -- did those courses 7 deal specifically with soil or groundwater pollution? 8 A. By specifically, what do you mean? 9 Q. Was the focus of those courses specifically chemical 10 contamination of soil or groundwater? 11 A. No, not for the most part. 12 Q. I just want to understand your testimony. Your 13 testimony is that the courses you took you acquired 14 information that's applicable to that topic? 15 A. That's right. 16 Q. Again, focusing on years 1968 to '79 did you take any 17 coursework or conduct any research that concerned the 18 make-up or properties of asphalt or concrete? 19 A. Concrete class, probably so in a couple of my civil 20 engineering classes. I don't recall about asphalt. 21 Q. And the concrete class you said would have been a 22 civil engineering class? 23 A. Yes. 24 Q. The study of concrete and asphalt -- 25 A. The study of materials among which concrete -- I think</p>

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<p>1 I recall the concrete portion of that class.</p> <p>2 Q. Can you describe for me what coursework or research</p> <p>3 you did -- conducted that dealt with industry</p> <p>4 practices for handling storage or disposing of</p> <p>5 chlorinated solvents?</p> <p>6 A. Industry practices for handling storage and disposing</p> <p>7 of --</p> <p>8 Q. Or disposal of chlorinated solvents.</p> <p>9 A. Well, the industry practices for handling dealt with</p> <p>10 things like pumping, mixing. It was applicable to all</p> <p>11 solvents -- all liquid chemicals including chlorinated</p> <p>12 solvents.</p> <p>13 Q. What about any coursework that specifically focused on</p> <p>14 the industry standards or practices for storing or</p> <p>15 disposing of chlorinated solvents?</p> <p>16 A. I don't believe such courses existed. I'm not sure</p> <p>17 they exist now. So the answer is no.</p> <p>18 Q. I'd like you to take a look back at your expert</p> <p>19 report. Turn to page one of the report, please.</p> <p>20 First paragraph, second to the last sentence states,</p> <p>21 in addition during the past ten years I have made an</p> <p>22 intensive focused study of spills, leaks and other</p> <p>23 discharges of perc and perc-containing waste.</p> <p>24 Did I read that correctly?</p> <p>25 A. Yes, you did.</p>	<p>1 of perc during a fire. It just went on from there.</p> <p>2 Q. Have you taken any courses other than -- you know,</p> <p>3 since receiving your Ph.D. in connection with this</p> <p>4 intensive study of spills of perc and perc</p> <p>5 contamination?</p> <p>6 A. Yeah. I took a short course. It's called groundwater</p> <p>7 course or the Princeton groundwater course.</p> <p>8 Q. When was that?</p> <p>9 A. Probably the summer of 1996 probably.</p> <p>10 MR. LYNCH: Can we mark this next exhibit?</p> <p>11 MARKED BY THE REPORTER:</p> <p>12 DEPOSITION EXHIBIT NUMBER 2040</p> <p>13 11:40 a.m.</p> <p>14 BY MR. LYNCH:</p> <p>15 Q. Showing you what's been marked as Exhibit 2040.</p> <p>16 That's a -- I believe it's a copy of your complete</p> <p>17 resume. Is that correct?</p> <p>18 A. Yes.</p> <p>19 Q. From January 2005?</p> <p>20 A. Mm-hmm.</p> <p>21 Q. I will direct your attention to page four under the</p> <p>22 topic additional formal training.</p> <p>23 A. Right.</p> <p>24 Q. Are either of those the short course you were just</p> <p>25 referring to?</p>
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<p>1 Q. Can you describe for me what that intensive focused</p> <p>2 study consisted of?</p> <p>3 A. It consisted of preparation for and participation in</p> <p>4 approximately 14 different -- 13 or 14 different cases</p> <p>5 involving perc contamination.</p> <p>6 Q. Has all of your study of perc contamination been in</p> <p>7 connection with litigation matters in which you have</p> <p>8 been retained as an expert witness?</p> <p>9 MR. DAVIS: I object to the form of the</p> <p>10 question simply -- I think you started out with</p> <p>11 talking about that second to last sentence of</p> <p>12 paragraph one of his report which is focused on the</p> <p>13 last ten years. I don't know if he could -- you know,</p> <p>14 your last question was nonrestrictive.</p> <p>15 MR. LYNCH: I will restrict it to time.</p> <p>16 BY MR. LYNCH:</p> <p>17 Q. In the past ten years has all of your study of spills,</p> <p>18 leaks and other discharges of perc and perc-containing</p> <p>19 wastes been performed in connection with testifying as</p> <p>20 an expert witness in litigation matters?</p> <p>21 A. Yes, I believe so.</p> <p>22 Q. What caused you to first begin to study that topic?</p> <p>23 A. I was approached by an attorney with a Houston law</p> <p>24 firm -- the firm was Boswell & Hallmark -- to provide</p> <p>25 expert testimony to them regarding an evaporation rate</p>	<p>1 A. It's the second one called the Princeton course.</p> <p>2 Q. Okay. Except for that course have you had any other</p> <p>3 training -- formal training on the topic of</p> <p>4 groundwater pollution and hydrology?</p> <p>5 A. No.</p> <p>6 Q. There is another short course identified in that</p> <p>7 exhibit right above that -- the short course offered</p> <p>8 by the International Network For Environmental</p> <p>9 Training. What did that short course concern or deal</p> <p>10 with?</p> <p>11 A. Dealt with bioremediation -- using microbes or enzymes</p> <p>12 to remove environmental contamination.</p> <p>13 Q. Anything in that course deal specifically with</p> <p>14 contamination by chlorinated solvents?</p> <p>15 A. I don't recall.</p> <p>16 Q. Have you published any books or articles on the topic</p> <p>17 of perchloroethylene contamination or spills?</p> <p>18 A. No.</p> <p>19 Q. Have you published any articles -- let me make sure I</p> <p>20 get the correct words here.</p> <p>21 Have you published any articles that deal</p> <p>22 with spills, leaks or other discharges of perc or</p> <p>23 perc-containing wastes?</p> <p>24 A. No.</p> <p>25 Q. Have you given any lectures or speeches on topics</p>

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1 15 and number 16 and probably number 17 also.	1 the question and the undefined nature of the terms you
2 Q. Do you recall which of those cases involved asphalt as	2 are using which obviously have legal significance in
3 opposed to concrete?	3 this context.
4 A. These were all inside locations, so it would have been	4 A. That sounds like a legal opinion, not really my
5 concrete, I think.	5 expertise.
6 Q. Aside from the instant case have you ever been asked	6 BY MR. LYNCH:
7 to or have you ever given an expert opinion as to the	7 Q. I'm just asking if you have ever been asked to give an
8 effect of perchloroethylene when it comes into contact	8 opinion on those issues.
9 with asphalt?	9 A. No.
10 A. I might have been asked about that in the first case	10 Q. How many times have you been qualified by a court to
11 -- case number one, but I don't recall very well.	11 provide expert testimony at trial?
12 Q. Do you know what the substance of your opinion on that	12 A. First case and the second case -- it's actually the
13 issue was?	13 same court, I think -- Harris County District Court.
14 A. That perc will react with asphalt.	14 MR. DAVIS: That counts twice.
15 Q. Did you give any opinion as to the rate at which that	15 THE WITNESS: Then there's two.
16 reaction will occur?	16 BY MR. LYNCH:
17 A. No -- I don't recall.	17 Q. Would it be the cases that indicate on here trial
18 Q. Did any of the cases in which you provided expert	18 testimony?
19 testimony involve allegations that the perc	19 A. Yeah.
20 contamination had resulted from a sudden and	20 Q. That would be the complete list of all the cases?
21 accidental spill of perc as opposed to continuous	21 A. Yeah.
22 leakage from the machines?	22 Q. Has a court ever refused or has a court ever ruled
23 A. Yes.	23 that you were not qualified to provide expert
24 Q. Which ones were those?	24 testimony in a matter?
25 A. Case number one was certainly that. It was released	25 A. No.
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1 during a fire. I think case number 15 involves it	1 Q. Has a court ever struck any portion of your expert
2 also, as does 16. I don't recall -- number 17 --	2 report or testimony?
3 whether it was an allegation of a sudden large spill	3 A. No, I don't think so.
4 or not.	4 Q. Okay. I will refer you back to your report. Again,
5 Q. What was the alleged spill in number 15?	5 the first page, second paragraph we have talked about
6 A. Well, it's been a while since I reviewed that, but I	6 a little bit before.
7 think it was a delivery spill. A delivery of perc to	7 It states, Dr. Harris claims that a single
8 the dry cleaner was alleged to cause the	8 large release in 1976 is responsible for the observed
9 contamination.	9 perc contamination at this site and gives no credence
10 Q. And in providing an expert opinion in that matter did	10 to any other possible causes of perc contamination.
11 you offer an opinion as to the validity or accuracy of	11 The facts of the case indicate otherwise as I outline
12 that allegation?	12 below.
13 A. A spill on intact concrete -- particularly in Texas --	13 Did I read that correctly?
14 is going to evaporate very rapidly.	14 A. Yes.
15 Q. And number 16, you said, also dealt with allegations	15 Q. In reviewing your report the only opinion I saw that
16 of the sudden accidental spill?	16 suggested a possible alternative source for the
17 A. I can't remember on that one for sure.	17 contamination found at the Dyce site would be in part
18 Q. Okay. Any other ones other than one and 15 that you	18 C, opinion C of the report.
19 do recall?	19 MR. GROSSBART: Where?
20 A. No, not that I recall.	20 MR. LYNCH: Opinion C, part C.
21 Q. Have you ever been asked to offer an opinion as an	21 BY MR. LYNCH:
22 expert as to whether a business entity should have	22 Q. It states perc thus evaporated from evaporation could
23 expected or intended damage to soil or groundwater as	23 remain for years at the bottom of ponds and could
4 a result of their actions?	24 eventually permeate through concrete over long periods
5 MR. GROSSBART: Objection to the form of	25 of time. Perc would attack and eventually dissolve

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1 MR. LYNCH: Page five.	1 but I also notice in your report you don't make
2 BY MR. LYNCH:	2 mention of any intentional discharges from any of the
3 Q. Opinion number two and three.	3 containment systems at the Dyce facility.
4 A. Which page are you on?	4 MR. GROSSBART: Objection to the form of
5 Q. Page five, opinions two and three.	5 the question.
6 A. All right.	6 BY MR. LYNCH:
7 Q. Can you read those opinions?	7 Q. Is that correct?
8 A. The site -	8 MR. GROSSBART: Objection to the form of
9 Q. No, no. Just to yourself is fine.	9 the question.
10 A. Okay. Sure. Yes. I have read them.	10 A. That's right. I don't.
11 Q. Are those the two opinions to which you offer rebuttal	11 BY MR. LYNCH:
12 testimony?	12 Q. Okay. Am I correct that since it is not mentioned in
13 MR. GROSSBART: Objection to the form of	13 your report you have not formed an opinion as to
14 the question.	14 whether such discharges may or may not have occurred?
15 A. I would also rebut four. I believe I rebut five. I	15 A. Well, there was - I know that there was discharges.
16 would say two through five.	16 They talk about running the one containment pond when
17 BY MR. LYNCH:	17 it got too full. They talked about draining that out
18 Q. Two through five?	18 into the pasture. What was the content of that
19 A. Mm-hmm.	19 drainage, I have no idea.
20 Q. Not one?	20 Q. Have you formed an opinion as to whether or not that's
21 A. I'm not a student of the regulations, so I wouldn't	21 a source of the contamination at the Dyce site?
22 really deal with that issue.	22 A. No.
23 Q. What about state of the practice, standards in the	23 Q. I also notice in your report that you don't discuss
24 industry?	24 any allegations concerning the dumping of liquid from
25 A. State of the practice means as bad as everybody else.	25 drums that were returned to the site.
Page 111	Page 113
1 I don't know. No. I don't know what the state of the	1 Is it true that you don't discuss those
2 practice was. It's not my expertise.	2 allegations in your report?
3 Q. Let's look a little bit more closely at number four.	3 A. I think they are contained within my opinion about the
4 I will direct your - let me look for it. We can	4 normal practices for cleaning barrels and, you know,
5 short-circuit this.	5 cleaning other vessels.
6 In your report, you don't discuss or make	6 Q. How about with respect to the dumping of liquid from
7 mention of any allegations of there being overflows or	7 drums that were being picked up by a barrel
8 intentional discharges from any containment system at	8 reconditioner?
9 the Dyce facility. Is that correct?	9 A. Again, as much as that's the normal expected practice
10 A. Overflows or discharges - potential discharges from	10 for handling vessels that contain perc, I think it's
11 containment - no. I don't believe I reference that.	11 contained within my opinions.
12 Q. Am I correct that since it is not discussed in your	12 Q. Have you formed an opinion as to whether if that
13 report you haven't formed an opinion as to whether	13 practice had occurred - if that practice occurred if
14 such events occurred?	14 it was a source of any of the contamination found at
15 A. I don't know one way or the other.	15 the Dyce site?
16 Q. Okay. And am I correct that you haven't formed an	16 A. I'm not really dealing with contamination. I don't
17 opinion as to whether those events, if they occurred,	17 think I offer a single opinion regarding actually how
18 might have contributed to any of the contamination	18 the contamination occurred. My opinions - my report,
19 found at the Dyce site?	19 as I have said before, is a rebuttal of Dr. Harris's
20 A. Just based on the physical properties of perc, an	20 report.
21 overflow of a containment pond would be almost	21 Q. Based on your review of the evidence cited in your
22 certainly an overflow of water. Wouldn't be any	22 report what do you understand to be the practice of
23 dissolved perc in that. I find that probably not a	23 Dyce Chemical with respect to handling drums that were
24 significance source.	24 returned to be picked up by a barrel reconditioner?
25 Q. I don't know if we covered this in the last question,	25 A. Well, the barrels were washed, reused if they could

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1 BY MR. LYNCH:	
2 Q. From what you are telling me, I take it, if someone	1 the asphalt -- different amounts of air space within
3 spilled perc onto concrete at Dyce or an asphalt	2 the asphalt?
4 surface at Dyce they would have no reason to expect	3 A. Not that I know of.
5 that the spill would permeate through the asphalt or	4 Q. Do you know whether there are different types of
6 concrete and reach the soil.	5 asphalt binder that are used to bind this asphalt
7 A. That's right. As long as it is intact, no big holes	6 together -- bind the aggregate together?
8 in it.	7 A. I don't know.
9 Q. That's another variable that would have to be	8 Q. Do you know if there is any binders used to create
10 considered -- whether the asphalt or concrete was	9 pavement that might have a different chemical make-up?
11 intact?	10 A. I don't know.
12 A. Yes.	11 Q. Do you know whether or not the type of binder that's
13 Q. The presence of joints in the asphalt or concrete,	12 used to bind the aggregate might have an effect on how
14 would that make a difference?	13 rapidly perc may or may not react with the asphalt?
15 A. This is getting somewhat outside my expertise, but I	14 A. Well, if the binder is itself a hydrocarbon then it
16 understand most joints for concrete do not go all the	15 probably will be attacked and dissolved by perc also.
17 way through. They go an inch or two into the depth of	16 If it's not a hydrocarbon, it's probably
18 the concrete.	17 inert. It probably would not affect perc's action on
19 MR. DAVIS: I don't think you have joints	18 the asphalt.
20 with asphalt.	19 Q. If it is a hydrocarbon do hydrocarbons all react
21 THE WITNESS: No, you don't.	20 uniformly in the presence of perchloroethylene?
22 MR. DAVIS: It's a continuous pour.	21 A. No.
23 THE WITNESS: It's a continuous pour.	22 Q. So if a certain hydrocarbon had one chemical
24 BY MR. LYNCH:	23 composition and another hydrocarbon had a different
25 Q. Any other variables that might affect the evaporation	24 chemical composition, they could dissolve at different
	25 rates?
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1 rates of perc?	1 A. They could.
2 A. I believe I have just stated all that.	2 Q. Do you know what types of aggregate were used to
3 Q. Opinion capital B, part B states perc is a good	3 create pavement in the 1970s?
4 solvent for hydrocarbon compounds such as asphalt and	4 A. No.
5 will dissolve the hydrocarbon portion of the asphalt.	5 Q. Would the type of aggregate have any effect on how
6 What do you mean perc is a good solvent?	6 rapidly perc might react with the asphalt?
7 A. It means it will dissolve, bring to solution	7 A. As long as the aggregate is rock or gravel, probably
8 hydrocarbon compounds like asphalt. Water is a poor	8 not.
9 solvent for asphalt. Perc is a good solvent.	9 Q. What if the aggregate was more densely packed?
10 Q. Do you have an understanding as to the make-up or the	10 A. Do you mean less hydrocarbon and more asphalt -- I'm
11 constituents of what makes up asphalt pavement?	11 sorry -- more asphalt and less --
12 A. Yes.	12 MR. DAVIS: Aggregate.
13 Q. A paved area of asphalt, is that all hydrocarbon	13 BY MR. LYNCH:
14 compounds?	14 Q. More aggregate --
15 A. No.	15 A. More aggregate and less asphalt -- more aggregate and
16 Q. What else is there?	16 less hydrocarbon?
17 A. Rock, gravel. It's called the aggregate part of it.	17 Q. Mm-hmm.
18 Q. How much of the actual asphalt pavement is made up of	18 A. Well, if that's the case, then for the same size spill
19 the aggregate?	19 of perc under the same conditions you would see more
20 A. I don't know.	20 of the aggregate exposed to a spill because the perc
21 Q. Any idea of a range?	21 would dissolve proportionally more of it.
22 A. Probably about half of it by mass. I would say more	22 Q. Are you aware of any studies, publications or
23 than half by mass is rock.	23 authorities that discuss the use of perc as a solvent
24 Q. Are there different -- depending on what the asphalt	24 for dissolving asphalt?
25 is used for, are there different compression levels to	25 A. I believe the ASTM standards for testing of asphalt

35 (Pages 134 to 137)

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1 actually involve either perc or perchloroethylene -- 2 I'm sorry -- perc or TCE, its chemical cousin. But 3 I'm not sure on that. 4 Q. Any other studies, publications or authorities that 5 might discuss perc as a solvent for dissolving 6 asphalt? 7 A. Not that I recall. 8 Q. Have you ever used perc as a solvent for dissolving 9 asphalt? 10 A. Yes. 11 Q. Describe that situation. 12 A. I have a small bottle of perc at home. And I have 13 just dissolved bits of asphalt in it to satisfy myself 14 that it actually happens. 15 Q. How much perc is in that bottle? 16 A. I have a gallon of perc. I probably used a couple 17 ounces in it in this test. 18 Q. How big was the piece of asphalt? 19 A. Oh, about the size of a quarter in diameter. 20 Q. Did you conduct this test in connection with forming 21 the opinions expressed in your report? 22 A. No. 23 Q. When did you conduct this test? 24 A. About three years ago. 25 Q. How did you go about dissolving perc in the asphalt --	1 surface area exposed, the faster it would dissolve. 2 Q. Do you know if the composition of asphalt changes at 3 all as the asphalt ages? 4 A. Yes, it does. 5 Q. What happens? 6 A. The so-called lighter hydrocarbons -- the ones that 7 are more volatile -- tend to disappear, evaporate. 8 Q. Would the age of the asphalt have any effect on how 9 rapidly it might dissolve in perc? 10 A. Some probably. 11 Q. How so? 12 A. Well, the older asphalt would have more of the high 13 molecular weight. Less volatile compounds would tend 14 to be the ones that were less soluble also. 15 Q. The test you conducted with the piece of asphalt, 16 where did you obtain that asphalt? 17 A. Side of the road by my house. 18 Q. Do you know whether in the '70s any additives were 19 added to asphalt -- things like anti-stripping 20 additives, things of that nature? 21 A. No. 22 Q. Do you have any knowledge as to what type of additives 23 might be added to asphalt at any time as a matter of 24 industry practice? 25 A. Maybe we can finish this line. I have no knowledge of
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1 or the asphalt in perc? 2 A. Put the perc in a small beaker and dropped the chunk 3 of asphalt into it, swished it around a little bit. 4 It dissolves. 5 Q. How long did that take? 6 A. Well, I started to see some of the color -- perc is 7 clear. But as soon as I dropped the asphalt in it, it 8 started to turn dark. 9 Q. Mm-hmm. 10 A. I would say all of the aggregate was exposed and loose 11 as gravel within a period of a minute or two. 12 Q. Was the asphalt completely surrounded by the perc? 13 A. Yes. 14 Q. Submerged in the perc? 15 A. Almost completely. 16 Q. Any other instance where you have ever witnessed perc 17 reacting with asphalt? 18 A. No. 19 Q. Would the porosity or permeability of the asphalt have 20 any effect on the rate or degree to which perc might 21 react with the asphalt? 22 A. Yes. 23 Q. How so? 4 A. The more porous or more permeable, the easier it would 5 be for the perc to get at the asphalt. The more	1 what additives there are or ever have been or ever 2 will be in asphalt. 3 Q. So I take it you also have no knowledge as to whether 4 any additives that might have been added to asphalt 5 might affect the rate at which asphalt reacts with 6 perc? 7 A. I think I answered that question with regard to 8 whether there was a hydrocarbon additive or something 9 was not a hydrocarbon additive. That's the substance 10 of my testimony. 11 Q. Okay. Do you have any knowledge as to whether perc's 12 reaction with asphalt is -- or perc reacts with 13 asphalt more quickly than TCE would react with 14 asphalt? 15 A. I don't know. 16 Q. Okay. Do you have any knowledge as to what the 17 typical extraction times might be using TCE to extract 18 vitamin from asphalt? 19 A. No. 20 Q. Any knowledge as to what temperatures and what those 21 tests might be conducted at routinely? 22 A. No. 23 Q. Would the temperature make a difference -- 24 A. Sure. 25 Q. -- as to how quickly perc reacts with asphalt?

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<p>1 A. Of course.</p> <p>2 Q. How so?</p> <p>3 A. Well, in general, compounds are more soluble as 4 temperature increases. So the warmer it is, the more 5 asphalt we could dissolve in perc. 6 Also, the mass transfer coefficient -- 7 which is the rate of dissolution -- would tend to 8 increase as you increase temperature.</p> <p>9 Q. Do other solvents such as BTEX compounds -- do you 10 know what I mean by BTEX compounds?</p> <p>11 A. Yes.</p> <p>12 Q. Do they also dissolve the hydrocarbons in asphalt?</p> <p>13 A. Yes.</p> <p>14 Q. Are those better solvents than perc when it comes to 15 dissolving asphalt?</p> <p>16 A. I don't know.</p> <p>17 Q. You don't have any knowledge one way or another as to 18 whether the reaction would be quicker with --</p> <p>19 A. I don't know.</p> <p>20 Q. Opinion B(b) again. If spilled on asphalt perc would 21 dissolve some of the asphalt and then would slowly 22 evaporate from the resulting asphalt/perc mixture. 23 How quickly -- first, would any of the perc 24 evaporate before it dissolved into the asphalt?</p> <p>25 A. Yes.</p>	<p>1 did?</p> <p>2 A. Yes.</p> <p>3 Q. You have no other knowledge as to how the asphalt 4 that's remaining after the perc evaporates might look?</p> <p>5 A. No. I disagree.</p> <p>6 Q. What other bases do you have?</p> <p>7 A. Just my understanding of what -- when you evaporate a 8 liquid out of something you have dissolved, the 9 remaining material that's left behind does have a 10 uniform, you know, appearance. That's what happens.</p> <p>11 Q. Opinion B, part C, talking about the alleged large 12 spill of 250 or more gallons of perc on asphalt, Dyce 13 Chemical, 1976.</p> <p>14 You state that it's highly unlikely such a 15 spill actually occurred and then you identify two 16 bases for that statement. I think we talked about 17 this before. Are those the only bases you have for 18 this statement?</p> <p>19 A. No.</p> <p>20 Q. What other bases do you have?</p> <p>21 A. It was never reported.</p> <p>22 Q. Anything else?</p> <p>23 A. I have to look at one of my exhibits.</p> <p>24 Q. Which?</p> <p>25 A. It's in my file.</p>
<p>1 Q. What portion or percentage?</p> <p>2 A. I don't know. Depend on the conditions.</p> <p>3 Q. No way of answering that without knowing the 4 particular conditions?</p> <p>5 A. I think that's true.</p> <p>6 Q. Then you state it would evaporate slowly from the 7 resulting asphalt/perc mixture. How quickly would 8 that evaporation occur?</p> <p>9 A. For a large spill it would be probably a matter of 10 hours rather than minutes for perc on concrete.</p> <p>11 Q. I'm sorry. Concrete or asphalt?</p> <p>12 A. Perc spilled on concrete will evaporate in minutes or 13 less -- even a large spill. Perc spilled on asphalt 14 will evaporate, I believe, over a matter of hours 15 rather than minutes. It's much slower -- at least ten 16 times slower.</p> <p>17 Q. When perc evaporates from the asphalt/perc mixture 18 what's left over?</p> <p>19 A. The asphalt.</p> <p>20 Q. In appearance, how is that asphalt different than it 21 was before the perc came in contact with it?</p> <p>22 A. It looked shinier. It was -- you know, in the 23 experiment I did it looked shinier and it was a 24 homogenous mass rather than more heterogeneous.</p> <p>25 Q. Is that opinion based solely on the experiment you</p>	<p>1 MR. DAVIS: Your summary?</p> <p>2 THE WITNESS: The summary.</p> <p>3 MR. DAVIS: The thing you prepared on 4 Saturday?</p> <p>5 THE WITNESS: I would like to take a break 6 while we find that.</p> <p>7 (Off the record at 2:05 p.m.)</p> <p>8 (Back on the record at 2:14 p.m.)</p> <p>9 BY MR. LYNCH:</p> <p>10 Q. Dr. Dale, I'm showing you what was previously marked 11 as Exhibit 2031 in this case. Is that the document 12 you were referring to that listed some additional 13 bases for your opinion that it is highly unlikely that 14 such a perc spill actually occurred?</p> <p>15 A. Right.</p> <p>16 Q. Direct your attention to the next sheet, item number 17 one, second CERCLA request. Part A states no incident 18 reports, logs prior to the 1992 -- prior to 1992 of 19 leaks or spills.</p> <p>20 Do you have an opinion as to whether any 21 leaks or spills occurred prior to 1992 of perc?</p> <p>22 A. I'm sure they did.</p> <p>23 Q. Okay. So the mere absence of logs or reports doesn't 24 preclude the fact that perc may have been spilled 25 prior to that date?</p>

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<p>1 BY MR. LYNCH:</p> <p>2 Q. You are here today testifying as an expert witness.</p> <p>3 A. Correct.</p> <p>4 Q. I'm just wondering if there is anything in your –</p> <p>5 could a layperson – is a layperson equally capable of</p> <p>6 reading Mr. Hallsten's deposition testimony and</p> <p>7 concluding whether or not it either supports or</p> <p>8 contradicts the existence of a spill of perc in about</p> <p>9 1976?</p> <p>10 A. I don't know what the layperson would conclude. I do</p> <p>11 know that if the only large spill of which there is</p> <p>12 deposition testimony occurred in the summer and the</p> <p>13 quarterly reconciliation discrepancy is in the spring</p> <p>14 that you can't get those two together.</p> <p>15 Q. Okay. And that's, again, based –</p> <p>16 A. There is no –</p> <p>17 Q. That's based upon common sense, not an expert –</p> <p>18 A. Yeah.</p> <p>19 MR. GROSSBART: Object to the form of the</p> <p>20 question.</p> <p>21 BY MR. LYNCH:</p> <p>22 Q. Down to number seven, the Johnson deposition you cite.</p> <p>23 Did Mr. Johnson work at Dyce in the 1970s?</p> <p>24 A. I think – I don't recall. I think he said he started</p> <p>25 in the early '80s, but I don't recall.</p>	<p>1 A. Well, if it's released very, very slowly then it may</p> <p>2 cause comparatively little damage to the asphalt. It</p> <p>3 may evaporate faster than it dissolves the asphalt.</p> <p>4 If it is released essentially</p> <p>5 instantaneously then it will be like – perc is very</p> <p>6 heavy, very dense – 1.6 times heavier than water. If</p> <p>7 it's released quickly it's going to act like a blast</p> <p>8 of solvent and just remove a large quantity of asphalt</p> <p>9 from the – large quantity of hydrocarbon from the</p> <p>10 asphalt.</p> <p>11 Q. Have you ever observed that happening –</p> <p>12 A. No.</p> <p>13 Q. – perc being released quickly onto asphalt – a large</p> <p>14 quantity?</p> <p>15 A. No.</p> <p>16 Q. What's the basis for that?</p> <p>17 A. Physics and chemistry.</p> <p>18 Q. Any other variables other than how fast the perc is</p> <p>19 released?</p> <p>20 A. The temperature, obviously clean-up attempts. I have</p> <p>21 testified to that before. I believe I'm repeating</p> <p>22 testimony at this point.</p> <p>23 Q. What did you assume the temperature was as the basis</p> <p>24 for this opinion that such a large spill would have</p> <p>25 damaged or discolored asphalt?</p>
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<p>1 Q. Except for the items that are cited in your expert</p> <p>2 report and the additional items that are cited in this</p> <p>3 document, Exhibit 2031, do you have any other factual</p> <p>4 or evidentiary basis on which you base your conclusion</p> <p>5 that it is highly unlikely that such a perc spill</p> <p>6 actually occurred?</p> <p>7 A. No.</p> <p>8 Q. Next sentence in that same portion of your report,</p> <p>9 opinion B(c), you state first such a large spill of</p> <p>10 perc would have damaged or discolored a large area of</p> <p>11 asphalt. You are assuming here a spill of 250 gallons</p> <p>12 of perc?</p> <p>13 A. Yes.</p> <p>14 Q. How much damage would it have caused?</p> <p>15 A. A significant amount of damage.</p> <p>16 Q. What do you mean by significant?</p> <p>17 A. It would have washed away the aggregate – the asphalt</p> <p>18 of a significant patch of aggregate – several square</p> <p>19 feet at least. It would have been noticeable.</p> <p>20 Q. Would the extent of the damage caused by such a spill</p> <p>21 have depended on any variables?</p> <p>22 A. Of course.</p> <p>23 Q. Such as?</p> <p>4 A. How fast the perc was released.</p> <p>5 Q. What difference does that make?</p>	<p>1 A. Yeah. Any temperature between close to freezing and</p> <p>2 about 70 to 80 degrees Fahrenheit.</p> <p>3 Q. What about below freezing?</p> <p>4 A. The perc would not have been below freezing. The</p> <p>5 asphalt may have been, but the perc would not have</p> <p>6 been.</p> <p>7 Q. If the asphalt was below freezing?</p> <p>8 A. Maybe slower reaction, less damage.</p> <p>9 Q. How much slower?</p> <p>10 A. I don't know.</p> <p>11 Q. How much less damage?</p> <p>12 A. I don't know.</p> <p>13 Q. We talked a little bit about how fast the perc is</p> <p>14 released. Would it also make a difference as to what</p> <p>15 angle the perc is released at?</p> <p>16 MR. GROSSBART: Objection.</p> <p>17 MR. DAVIS: Objection. Vague. I don't</p> <p>18 know what you mean by angle. Do you?</p> <p>19 THE WITNESS: No.</p> <p>20 BY MR. LYNCH:</p> <p>21 Q. If the perc was sprayed from a hose directly onto the</p> <p>22 concrete as opposed to being sprayed out and then</p> <p>23 falling onto the concrete – I'm sorry – asphalt.</p> <p>24 Would that make a difference?</p> <p>25 A. I think the most important variable there is how high</p>

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1 Q. Any realistic conditions. 2 A. No. 3 Q. Have you ever seen asphalt that's been dissolved by 4 perc except for the experiment you conducted? 5 MR. DAVIS: Asked and answered. 6 A. No. 7 BY MR. LYNCH: 8 Q. Part B(c), second basis states such a large spill of 9 perc would have produced a strong odor over a very 10 large area and would have been noticed by Dyce 11 employees or Dyce neighbors. 12 Did I read that correctly? 13 A. I didn't have very large area. You said very large. 14 Q. I'm sorry. 15 A. I just said large. Otherwise yes. Otherwise correct. 16 Q. Have you ever been present when a spill of 250 to 17 1,000 gallons of perc occurred? 18 A. Been present at a spill of about a half gallon of 19 perc. 20 Q. How close were you? 21 A. Three, four feet away. 22 Q. Indoors or outdoors? 23 A. Indoors. 24 Q. How large of an area would the strong odor have been 25 noticeable in?	1 cleaning it up with protective gear and he didn't 2 smell it. He would have smelled it. 3 Q. Did he say he didn't smell it or did he say he didn't 4 recall? 5 A. He doesn't testify to having smelled it. 6 Q. Do you know if he testified whether he recalls whether 7 or not perc had any smell? 8 A. I don't know. 9 MR. GROSSBART: The "he" in your question 10 is Bender — 11 MR. LYNCH: Mr. Slater. I'm sorry. 12 THE WITNESS: I don't know what Mr. Slater 13 knows about perc smell. 14 Well, take that back. He put his head in 15 those barrels. I'm recalling his testimony. Yeah. 16 He said it made his eyes run, choking, gasping. 17 BY MR. LYNCH: 18 Q. You indicated that it would certainly have been 19 smelled by anyone in the Dyce warehouse or office. Is 20 that correct? 21 A. That's right. 22 Q. Does it make a difference if the wind was blowing the 23 opposite direction and the windows were closed? 24 A. Opposite direction of — 25 Q. Blowing away from the office.
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1 A. Probably depends on wind direction and actually how 2 fast it got spilled, but certainly over the entire 3 Dyce complex. 4 If that spill took place in the loading 5 dock area the people in the main building — office 6 building would certainly have known about it. 7 Q. What is the basis for that opinion? 8 A. Because perc at about 100 parts per million — 9 one-tenth of one percent — makes your eyes water. At 10 about 300 parts per million — makes your eyes water, 11 your nose stream, you have a real difficult time. 200 12 to 300 parts per million you have difficulty 13 breathing. 500 parts per million you become 14 intoxicated and die. People would have remembered 15 that spill. 16 By the way, that's why I know that the 17 spill that Mr. Slater witnessed was not a perc spill. 18 MR. GROSSBART: I'm sorry. I didn't hear 19 the last — 20 THE WITNESS: That's why I know that the 21 spill that Mr. Slater witnessed in the summer of 1976 22 couldn't have been a perc spill. 23 BY MR. LYNCH: 24 Q. Why is that? 25 A. Because Mr. Bender didn't testify that Mr. Bender was	1 A. Where that spill — the places where the perc could 2 have spilled were right next to the office and the 3 warehouse. No, I don't think so. Particularly since 4 perc spreads out as it spills. 5 Q. Going back to the 1975 photo — if we can find it. 6 A. Mm-hmm. 7 Q. Using that photo can you show me where the office is? 8 A. Right in this area. 9 Q. Okay. Do you know, is the — strike that. 10 And your understanding of where the perc 11 spill occurred is — 12 A. Well, I don't believe there was a perc spill, but 13 where it was alleged to have spilled would be in this 14 area. 15 Q. TouchT. 16 MR. DAVIS: That's one of his sneaky trick 17 questions. 18 THE WITNESS: I have five kids. 19 BY MR. LYNCH: 20 Q. On that diagram can you indicate how large of an area 21 the perc spill would have been noticeable over? 22 MR. DAVIS: Assuming for the sake of 23 argument that there was a perc spill. 24 A. I don't know the scale, but I'm assuming it's about 25 one inch equals 50 feet. It's about right — the perc

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1 spill would have covered about this area here between 2 the end of the warehouse and -- 3 BY MR. LYNCH: 4 Q. Is there -- 5 A. Let me add to my response of a previous question. 6 Prevailing winds in Billings are from the 7 northwest -- this direction. A spill here would have 8 taken the odor directly toward the office based on 9 prevailing winds. 10 Q. Those are prevailing winds throughout the year? 11 A. Pretty much. 12 Q. Do you have an understanding as to whether this area 13 that's labeled PCE handling in 1975 to 1980 -- was 14 that sloped in any direction? 15 A. I don't know about the slope. 16 Q. Would it have made a difference if the perc was 17 flowing off of that area -- away from that area? 18 Would that have any difference on your opinion? 19 MR. DAVIS: The opinion on -- 20 MR. LYNCH: On the area covered by the area 21 -- strong odor of perc. 22 A. No. 23 BY MR. LYNCH: 24 Q. Why not? 25 A. If the wind comes from this direction or just this	1 drumming operation the odor would be 1,000 times as 2 great -- 250 gallon spill versus one quart. 3 I'd like to add to my testimony. 4 Mr. Naff's deposition, page 131 says 100 gallons of 5 perc on asphalt would have been noticed -- he refers 6 to odor. But no one came to him saying they knew 7 about the spill. It is not only my opinion regarding 8 the strong odor but also Mr. Naff's. 9 Q. You indicate that Dyce's neighbors would have noticed 10 the odor. 11 MR. GROSSBART: Objection to the form of 12 the question. 13 BY MR. LYNCH: 14 Q. Is that correct? 15 A. Anybody -- yes. Anybody downwind of it would have 16 noticed. 17 Q. How far downwind? 18 A. I don't know. 19 Q. Do you know how far their nearest neighbor is? 20 A. There was another company up here -- I don't know 21 where they are, not for sure. 22 Q. Part C of your report states perc discharged to ponds 23 or basins where water is present will evaporate very 24 slowly or not at all. 25 A. That's correct. It does say that.
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1 area, it's going to spread out. The vapor cloud from 2 the perc will evaporate and then will start to spread 3 out. It'll just tend to cover this whole area. And 4 it will be smeared in this direction toward the 5 warehouse, toward the offices, smeared toward the 6 southeast from the northwest by the winds. 7 Q. What's the basis for your testimony as to the 8 direction of the prevailing winds in Billings? 9 A. Personal knowledge of having lived at the foot of 10 mountains in Colorado and also the general direction 11 of winds. It may be that it's on this weather report 12 also. Not here, so no. 13 Q. Do you have any understanding or knowledge as to how 14 much of an odor was created during routine unloading 15 -- the routine loading or unloading or drumming of 16 perc in that area? 17 A. I believe that one or more of the witnesses recalls -- 18 does speak about odors from perc. But I don't recall 19 whether it's from the drumming or not. 20 Q. I know you characterized or you have opined that a 21 large spill of perc would have produced a strong odor. 22 How strong of an odor would that be as 23 compared to an odor produced during a normal drumming 24 or unloading operation? 25 A. Well, it's -- if you dropped a quart during the	1 Q. Is that just a general principle based on your 2 knowledge of chemistry? 3 A. Yes. 4 Q. Do you have any opinion as to how quickly any of the 5 -- any perc that might have been discharged into a 6 containment unit on the Dyce facility would have 7 evaporated? 8 A. If it was covered with water it would never evaporate. 9 As long as it stays covered with water it would never 10 evaporate. 11 Q. Would any portion of the perc become dissolved into 12 the water? 13 A. Very small amount. 14 Q. Would the dissolved portion evaporate? 15 A. It could. 16 Q. If there were BTEX compounds in the water would they 17 tend to dissolve any perc that may be there? 18 A. I'm sorry? 19 Q. If there were any BTEX compounds in the water would 20 that dissolve any perc that might be in there? 21 A. It would depend on the relative amounts. If there 22 were a lot more BTEX than perc then, yeah, it would 23 dissolve the perc. If not it would be the other way 24 around. The perc would dissolve the BTEX. 25 Q. Would it make a difference as to whether the perc

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<p>1 moves in the subsurface once it permeates the surface 2 of the ground?</p> <p>3 A. It's complicated. It's denser than water, so it 4 sinks. It sinks until it reaches an impervious layer. 5 It then may migrate along that impervious layer. It 6 may spread out. It's complicated.</p> <p>7 Q. Is it your opinion that the information as to the 8 location and nature of the contamination found at the 9 Dyce site indicates that the contamination was more 10 likely to have been caused by the subsurface migration 11 of DNAPL perc from a historic containment area than 12 from a spill in the loading/unloading area that flowed 13 above ground to the northwest corner?</p> <p>14 MR. GROSSBART: Objection to the form of 15 the question.</p> <p>16 A. That's quite a complex question. I have told you 17 before that the scope of my assignment here is really 18 to deal with the rebuttal of Dr. Harris's report. 19 But I will tell you that from what I do 20 understand it looks as if this was a surface release 21 up here. There are higher concentrations near the 22 surface in this area of the northwest corner -- the 23 extreme northwest corner whereas if it had been 24 released from the bottom of a containment pond and 25 migrated in the subsurface that would be less likely</p>	<p>1 and whether they could be a cause of contamination? 2 MR. DAVIS: What was -- 3 MR. LYNCH: Strike that. Bad question. 4 BY MR. LYNCH: 5 Q. Are you intending to offer an opinion at trial or in 6 any affidavit in connection with this matter that the 7 source of the contamination found in the northwest 8 corner of the Dyce site -- what we have been calling 9 the hot spot -- resulted from a discharge of water 10 from containment as opposed to water permeating 11 through the bottom of the containment structure? 12 MR. DAVIS: Object to the form of your 13 question. You are talking about discharge of water. 14 I don't think discharge of water caused any problems 15 other than -- 16 MR. LYNCH: Discharge of liquids. 17 A. Maybe I can recap. I was asked to rebut the opinions 18 of Dr. Harris. Dr. Harris's offered explanation for 19 the contamination here in the far northwest corner of 20 the site was that there was a surface spill of 250 21 gallons or more of perc down here near the warehouse 22 and dock and that somehow that 250-gallon spill 23 migrated over land leaving little or no trace and 24 discharged here at the surface in the northwest 25 corner.</p>
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<p>1 to be the source -- the containment pond.</p> <p>2 BY MR. LYNCH: 3 Q. I just want to clarify because I'm a little confused 4 with your testimony. 5 Do you have an opinion as to what the cause 6 of the contamination found in the so-called hot spot 7 area is in the northwest corner of the Dyce site?</p> <p>8 MR. GROSSBART: Objection to the form of 9 the question.</p> <p>10 A. Again, you are outside of my area of expertise. Given 11 the fact that this former pond area was drained into 12 by running a hose out into this northwest corner -- 13 this pasture area -- it's quite likely that the hose 14 drained perc from the bottom of this pond area and 15 discharged it to the surface. That's an alternative 16 mechanism. Another mechanism is escape from the 17 bottom. Again, that's outside of my area of 18 expertise.</p> <p>19 BY MR. LYNCH: 20 Q. That's what I wanted to clarify. That's not an opinion you've addressed in your expert report? 22 A. That's correct. 23 Q. And I believe we testified earlier as to whether you 4 had an opinion as to whether any discharges or 5 releases from containment units did, in fact, occur</p>	<p>1 I believe, again, that's a very, very 2 unlikely scenario. That was the extent of my opinion. 3 That's what I have been asked to rebut. 4 BY MR. LYNCH: 5 Q. I understand that, Mr. Dale. I am not intending to -- 6 I just want to ascertain the limits of what you will 7 be opining at trial of this matter. 8 A. Those are contained in my expert report. 9 Q. Okay. So nothing that's not in your expert report 10 will be -- 11 A. I am not a hydrogeologist. I am not a perc 12 connotation migration -- perc contamination expert. 13 That's not my expertise and specifically it's not what 14 I was asked to do here, so no. 15 Q. So am I correct that you do not have an expert opinion 16 as to what caused the contamination that's been found 17 in the northwest corner of the site? 18 MR. DAVIS: That's a different question. 19 You asked him what he was asked to do. He may have an 20 opinion. 21 BY MR. LYNCH: 22 Q. Do you have an expert opinion as to what caused the 23 contamination in the northwest corner area of the 24 site? 25 A. As an expert or as a technical person who understands</p>

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<p>1 these things? As an expert hired to address a 2 particular set of issues or as a guy who has a brain 3 and has been around this for ten years? Which is it?</p> <p>4 Q. We'll go with the expert first. Firstly as an expert.</p> <p>5 A. My expert report details my expert opinions.</p> <p>6 My technical expertise using my whole brain 7 says that there was perc at the bottom of this pond 8 area or wherever the pond area that they discharged 9 perc. If you drop a hose into that and run the hose 10 out to discharge it in the pasture up here that's 11 where they got the perc. That's where you got a large 12 surface area of perc. You had it in a hose. It 13 didn't magically get 350 feet over land and drop in 14 there.</p> <p>15 Q. What's the basis for your belief that water was 16 discharged from -</p> <p>17 MR. GROSSBART: You know, he --</p> <p>18 BY MR. LYNCH:</p> <p>19 Q. -- the former pond area?</p> <p>20 A. There is deposition testimony to that effect.</p> <p>21 Q. Whose deposition testimony?</p> <p>22 A. We can find it if you want.</p> <p>23 Q. But it is not cited in your report, so that's why I'm 24 wondering.</p> <p>25 MR. GROSSBART: He just told you that it's</p>	<p>1 MR. GROSSBART: Are you going to testify to 2 that at trial in Montana?</p> <p>3 THE WITNESS: The court reporter may have a 4 different opinion.</p> <p>5 BY MR. LYNCH:</p> <p>6 Q. If we look at Exhibit 2045, you see two other areas on 7 that exhibit that are marked with green -- marked in 8 green. Is that correct?</p> <p>9 A. Yes.</p> <p>10 Q. Do you have an understanding as to what those areas 11 are?</p> <p>12 A. They are additional -- well, let's see. This is 13 estimated extent of contaminated Vadose soil above 14 remediation goals. Estimated extent of source area -- 15 geez, this is small print -- of source area saturated 16 zone soil. There is surface contamination apparently.</p> <p>17 Q. Do you know whether Dr. Harris offered an opinion as 18 to what the likely source of the contamination found 19 in those areas was?</p> <p>20 MR. GROSSBART: Objection to the form of 21 the question.</p> <p>22 A. I believe he indicated these were surface spills, 23 loading and unloading. But I don't recall for sure.</p> <p>24 BY MR. LYNCH:</p> <p>25 Q. Do you dispute -- well, let's look at the report.</p>
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<p>1 beyond what he's going to be testifying to. Then you 2 say you want an answer in any event. He gives you the 3 answer and then you complain that it's not in his 4 report. You can't have it both ways.</p> <p>5 If you want to go fishing for his view, ask 6 him who he thinks should, you know, run for senator, 7 too. But that's not in the report. That's not what 8 he will be testifying to. That's the problem with the 9 questions.</p> <p>10 You can't ask for an off-the-cuff opinion 11 and then impeach him with the fact that it's not in 12 his report when he tells you that's not what he's here 13 to testify about as an expert retained in this case as 14 opposed to somebody who is an expert in the field and 15 has a brain, as he said.</p> <p>16 That's just harassing the witness at this 17 point.</p> <p>18 MR. LYNCH: Is that your objection?</p> <p>19 MR. GROSSBART: Yes, it is. Anything you 20 didn't understand about it? Because I will repeat it 21 if you want.</p> <p>22 MR. LYNCH: I'm sure you will.</p> <p>23 THE WITNESS: The senator, by the way, 4 should be Keith Butler.</p> <p>5 MR. DAVIS: Who's Keith Butler?</p>	<p>1 MR. DAVIS: It's an exhibit.</p> <p>2 BY MR. LYNCH:</p> <p>3 Q. This one. Page five, opinion five on that states 4 investigative data, deposition testimony, aerial 5 photographs and other historical evidence indicate 6 that contamination found in other areas of the Dyce 7 site most likely arose from infrequent accidental 8 releases and relatively small quantities of chemical 9 product nearly all of which occurred in the 1970s or 10 early 1980s.</p> <p>11 A. Yes. You read it correctly.</p> <p>12 Q. In your report have you taken issue with or rebutted 13 that opinion expressed by Dr. Harris?</p> <p>14 MR. GROSSBART: Objection to the form of 15 the question.</p> <p>16 A. No. My rebuttal is the single large spill of 250 17 gallons or more, not the small quantities.</p> <p>18 BY MR. LYNCH:</p> <p>19 Q. In your report have you expressed any opinion as to 20 how the contamination in these two other additional 21 areas occurred?</p> <p>22 MR. GROSSBART: Asked and answered.</p> <p>23 MR. DAVIS: I will object as to foundation.</p> <p>24 He's just indicated he rebutted the 250-gallon spill. 25 He hasn't addressed that. So how his report would</p>

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1 address something it didn't address is --	1 Q. I'm showing you 2019B, it looks to be the same
2 MR. LYNCH: Does his report --	2 document --
3 MR. GROSSBART: Asked and answered.	3 MR. GROSSBART: Is that the same as this?
4 A. No, it doesn't.	4 MR. LYNCH: I believe it's from a different
5 BY MR. LYNCH:	5 report.
6 Q. Do you have any -- are you aware of any facts or	6 BY MR. LYNCH:
7 evidence that would call into question the validity of	7 Q. Figure 4.2 of Brenntag source area, soil remediation
8 the opinion expressed in part five of Dr. Harris's	8 areas. It's -- looks like it was produced by Tetra
9 report that I just read?	9 Tech. I assume it was one of the exhibits to their
10 MR. GROSSBART: Objection to the form of	10 investigative reports.
11 the question.	11 MR. GROSSBART: They sure look alike.
12 He just said that's beyond what his	12 THE WITNESS: They do.
13 rebuttal is. It is an improper question to ask him	13 BY MR. LYNCH:
14 that. It's beyond his expertise for purposes of this	14 Q. This one Exhibit 2019 might be a little easier to
15 case.	15 read.
16 A. No. I didn't address that.	16 Referring again to the source area closer
17 BY MR. LYNCH:	17 to the warehouse, do you have an understanding as to
18 Q. Okay. And the reason I ask is because -- and the	18 when that area was paved with either asphalt or
19 record will bear this out, but I believe you indicated	19 concrete?
20 earlier that that is one of the opinions you rebutted	20 MR. GROSSBART: Asked and answered.
21 in your report. I just want to make sure it is not	21 A. I told you I don't know. That was my last answer to
22 one of the opinions you rebutted in your report.	22 you.
23 MR. DAVIS: Paragraph five of page five of	23 BY MR. LYNCH:
24 Harris's report?	24 Q. Given --
25 MR. LYNCH: Yes.	25 A. I should say I don't recall.
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1 BY MR. LYNCH:	1 Q. Given your -- the opinion expressed in your report --
2 Q. The area -- the larger of the two green areas other	2 given your opinion B expressed in your report that
3 than the hot spot area marked towards the -- what you	3 spills and leaks of perc on concrete or asphalt at
4 believe is in --	4 Dyce Chemical are very unlikely to have permeated
5 A. The warehouse?	5 through to the soil -- strike that.
6 Q. -- the warehouse area of it, do you have an	6 Do you have an understanding as to whether
7 understanding as to what the surface of that area was?	7 that area that's designated in green -- the source
8 Was it paved, dirt? Was it --	8 area closest to the warehouse -- whether that area was
9 A. Well, when?	9 ever paved with either asphalt or concrete?
10 Q. In 1975.	10 A. I don't recall.
11 A. I believe it was gravel at that point. At least part	11 Q. You have opined that the alleged spill of 250 or more
12 of it was gravel.	12 gallons of perc occurred on asphalt according to your
13 Q. Do you know which part?	13 testimony. Is that correct? Or in an area that was
14 A. I don't. Also part of -- the tanks were on concrete,	14 covered with asphalt. Is that correct?
15 but the area around the concrete I understand was	15 A. I don't believe the spill ever occurred. I have told
16 gravel.	16 you that again and again.
17 Q. Do you know if or when that area was paved with either	17 Q. Well, no. There is an alleged large spill of 250
18 asphalt or concrete?	18 gallons or more of perc on asphalt at the Dyce
19 A. I don't recall the dates.	19 Chemical facility in about 1976 and is part B(c) of
20 MR. LYNCH: Let me mark this 2019 Exhibit	20 your report, correct?
21 -- I'm sorry. 2019B.	21 A. An alleged spill, yes.
22 MARKED BY THE REPORTER:	22 Q. Can you identify where using Exhibit 4.2 -- or I'm
23 DEPOSITION EXHIBIT NUMBER 2019B	23 sorry -- Exhibit 2019B where that spill occurred?
24 4:06 p.m.	24 MR. DAVIS: Objection to the form of the
25 BY MR. LYNCH:	25 question.

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<p>1 Q. The first other purported cause identified by Dr. 2 Harris is other large spills and releases. 3 Do you have an opinion as to whether or not 4 any other large spills or releases occurred that 5 caused the contamination in the northwest corner? 6 MR. GROSSBART: Objection to the form of 7 the question. He's testified that he doesn't believe 8 any spills -- not any other ones, but any. 9 MR. DAVIS: Large. 10 MR. LYNCH: He just testified that he is 11 rebutting -- 12 MR. GROSSBART: Any large spills. 13 MR. LYNCH: He's rebutting this opinion 14 expressed by Dr. Harris. I want to find out which -- 15 MR. GROSSBART: The problem with number 16 four is that on page five it says -- after saying in 17 number two and number three that there was a 18 250-gallon spill he then says in number four -- he 19 kind of slips it around and approaches the same thing 20 from the other direction and says there is no other 21 explanation but for what I say in number two and 22 three. 23 So necessarily the witness is rebutting 24 four by virtue of the fact that he's rebutting two and 25 three. Definitionally that's the case.</p>	<p>1 northwest corner is polluted; that he's been retained 2 to say that however that may have happened it wasn't 3 because of the 250-gallon spill that Harris relies on. 4 THE WITNESS: That's correct. I'm not 5 sure. And I have not studied how that contamination 6 may have occurred. 7 BY MR. LYNCH: 8 Q. Okay. 9 A. That's not my assignment. 10 MR. LYNCH: I have no further questions. 11 MR. GROSSBART: Just a couple questions -- 12 THE WITNESS: Is the Brill question 13 withdrawn then? 14 MR. LYNCH: We'll withdraw the Brill 15 question. 16 MR. GROSSBART: For the record, to the 17 extent we have any time left in the seven hours we 18 reserve the right to hold the deposition open. 19 MR. DAVIS: We'll give you six or seven 20 minutes, Chris. 21 EXAMINATION 22 BY MR. DAVIS: 23 Q. Professor Dale, earlier -- much earlier this morning 24 in talking about one of your fundamental opinions 25 about the evaporative qualities of free-form perc you</p>
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<p>1 That's the problem and, I think, the 2 confusing nature of your question. If you rebut two 3 and three you are definitionally rebutting four. 4 MR. LYNCH: I just want to clarify. 5 BY MR. LYNCH: 6 Q. On page 38 of Dr. Harris's opinion it refers to leaks, 7 overflows or discharges from the containment area. 8 On page 40 he refers to dumping of drums by 9 barrel reconditioners. I just want to clarify -- I 10 understand you are rebutting Harris's opinion number 11 four. 12 In so rebutting Harris's opinion number 13 four are you offering any opinion that any of these 14 events occurred or that they are, in fact, the source 15 -- probable source of the contamination found in the 16 northwest corner? 17 MR. GROSSBART: Objection to the form of 18 the question. 19 MR. DAVIS: Same objection. It's compound 20 and it's vague. You are referring to various pages of 21 testimony -- 22 MR. GROSSBART: He's already testified -- 23 MR. DAVIS: -- or report. 24 MR. GROSSBART: -- that he is not -- that 25 it's beyond his retention to pin down why the</p>	<p>1 had referenced relying upon deposition testimony from 2 a Mr. Cannon, a Mr. Agardy and I think you brought 3 some other depositions. 4 Let me ask you this: Apart from those 5 depositions, has the education that you have reviewed 6 with Mr. Lynch today and your work experience as a 7 professor of chemical engineering -- do those matters 8 in your background in your education and work 9 experience allow you without taking into account the 10 deposition testimony you have referenced today from 11 these other witnesses and other cases allow you to 12 opine about the evaporative qualities of free-form 13 perc? 14 A. Yes. 15 Q. All right. And does your education and training as a 16 professor of chemical engineering allow you to -- what 17 is your -- are your opinions any different? 18 A. No. I knew that perc evaporated very, very fast 19 before I ran the numbers and before I heard anybody's 20 deposition testimony. 21 Q. All right. You don't need their depositions to opine 22 as you have about how quickly perc evaporates? 23 A. No, I don't. 24 Q. All right. And then the same question I have about 25 the nature of the odor or what someone would notice</p>

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2	STATE OF MICHIGAN)	2	DEPOSITION EXHIBIT NUMBER 2045
3) SS	3	DEPOSITION EXHIBIT NUMBER 2046
4	COUNTY OF INGHAM)	4	DEPOSITION EXHIBIT NUMBERS 2047-2048
5		5	DEPOSITION EXHIBIT NUMBER 2049
6	I, Kelli L. Werner, a Notary Public in and	6	DEPOSITION EXHIBIT NUMBER 2019A
7	for the above county and state, do hereby certify that	7	DEPOSITION EXHIBIT NUMBER 2019B
8	the above deposition was taken before me at the time	8	
9	and place hereinbefore set forth; that the witness was	9	
10	by me first duly sworn to testify to the truth, and	10	
11	nothing but the truth; that the foregoing questions	11	
12	asked and answers made by the witness were duly	12	
13	recorded by me stenographically and reduced to	13	
14	computer transcription; that this is a true, full and	14	
15	correct transcript of my stenographic notes so taken;	15	
16	and that I am not related to, nor of counsel to either	16	
17	party nor interested in the event of this cause.	17	
18		18	
19		19	
20		20	
21		21	
22	<u>Kelli L. Werner, CSR-6610, RPR</u>	22	
23	Notary Public,	23	
24	Ingham County, Michigan	24	
25	My Commission expires: 02/01/2008	25	
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